The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HARIKLIA DRIS REITZ, NOBUYUKI KAMBE, and SUJEET KUMAR

Appeal No. 2004-1233
Application No. 09/433,202

ON BRIEF

Before GARRIS, TIMM, and POTEATE, Administrative Patent Judges.

GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 1-28 and 31 which are all of the claims remaining in the application.

The subject matter on appeal relates to a particle dispersion wherein less than about one in 10^6 particles have a primary particle diameter greater than about three times the average primary particle diameter as well as to methods of using and forming such a particle dispersion. The appealed subject

matter also relates to a method for polishing a surface by abrading the surface with a particle dispersion wherein abrading the surface results in removal of greater than about a factor of two more material from the surface per unit time than corresponding polishing with an equivalent concentration of particles having an equivalent composition and an average particle diameter greater than about 1 micron. This appealed subject matter is adequately illustrated by independent claims 1 and 31 which read as follows:

> 1. A particle dispersion comprising a liquid and a collection of particles at a concentration of less than about 50 weight percent in the dispersion, the collection of particles having an average primary particle diameter less than about 50 nm and less than about one in 10^6 particles having a primary particle diameter greater than about three times the average primary particle diameter.
>
> 31. A method for polishing a surface comprising metal or a metal compound, the method comprising abrading the surface with a particle dispersion, the particle dispersion comprising a collection of particle[s] having an average primary particle diameter less than about 100 nm, the abrasion removing greater than about a factor of two more material from the surface per unit time than corresponding polishing with an equivalent concentration of particles having an equivalent composition and an average particle diameter of greater than about 1 micron.

The references set forth below are relied upon by the examiner in the Section 103 and double patenting rejections before us:

Rostoker et al. (Rostoker)	5,389,194	Feb. 14, 1995
Ishitobi et al. (Ishitobi)	5,935,278	Aug. 10, 1999
Farkas et al. (Farkas)	6,001,730	Dec. 14, 1999
Kambe et al. (Kambe)	6,290,735	Sep. 18, 2001
Reitz et al. (Reitz)	09/266,202	Mar. 10, 1999

The examiner has dropped a number of the rejections presented in his final Office action (i.e., paper no. 6, mailed September 25, 2000). Consequently, the only rejections advanced on this appeal are those listed hereinafter.

All of the appealed claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rostoker in view of Ishitobi and Farkas.

All of the appealed claims are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of Reitz in view of Ishitobi and Farkas.

All of the appealed claims are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of Kambe in view of Ishitobi and Farkas.

On pages 6 and 7 of the brief, the appellants have separately grouped appealed independent claims (i) 1 (and other claims) and (ii) 31 as well as dependent claims (iii) 23, (iv)

24 and (v) 27. However, the appellants have not separately argued with reasonable specificity the above noted rejections of these dependent claims (e.g., see pages 26-32 of the brief and pages 2 through 5 of the reply brief). It is well settled that, in order to obtain individual consideration, commonly rejected claims must be separately grouped and separately argued by an appellant. See Ex parte Schier, 21 USPQ2d 1016, 1018 (Bd. Pat. App. & Int. 1991). Also see 37 CFR § 1.192(c)(7)(8)(2000). Therefore, in our disposition of this appeal, we will not individually consider dependent claims 23, 24 and 27 but instead will restrict our focus to independent claims 1 and 31 only.

Rather than reiterate the respective positions advocated by the appellants and by the examiner concerning these rejections, we refer to the brief and reply brief and to the answer for a complete exposition thereof.

OPINION

For the reasons set forth below, we will sustain the Section 103 rejection and the double patenting rejection based on the claims of Kambe but not the double patenting rejection based on the claims of Reitz.

We agree with the examiner (e.g., see page 7 of the answer) that Rostoker discloses (e.g., see lines 4-26 in column 7, the examples and patent claim 10) a particle dispersion having an average primary particle diameter and distribution which at least overlaps the diameter and distribution ranges defined by appealed independent claim 1.[1] The appellants acknowledge that Rostoker describes a particle size distribution but state that they "have struggled to understand the precise meaning of the terms in the Rostoker patent with respect to their asserted distributions" (brief, page 26).[2] This aspect of patentee's disclosure was addressed in a Board decision mailed February 27, 2003 on an appeal (i.e., Appeal No. 2001-1031) of a related application (i.e., application 09/136,483).

For example, the appendix of this prior decision included a calculation of Rostoker's example 1 using the terms and

---

[1]The examiner has not relied on the Ishitobi and Farkas references for any of the features recited in the claims argued by the appellants on this appeal. It follows that we need not discuss these references in our assessment of the issues before us.

[2]On the record before us, the only argument advanced by the appellants with respect to independent claim 1 concerns the "distribution" feature which is defined by the claim recitation "the collection of particles having . . . less than about one in 10^6 particles having a primary particle diameter greater than about three times the average primary particle diameter."

parameters disclosed in lines 4-17 of column 7. This calculation employed values explicitly disclosed by Rostoker for his X, Y and P parameters and revealed particle size distributions which fall entirely within the distributions defined by claim 1 here on appeal (and claim 1 of the prior appeal) for a corresponding average particle size. A reproduction of the relevant portion of these calculations is appended to the subject decision.

Under these circumstances, we consider the Rostoker patent to establish a prima facie case of unpatentability for the appealed claim 1 particle dispersion including the here claimed distribution feature which defines the collection of particles as having "less than one in 10^6 particles having a primary particle diameter greater than about three times the average primary particle diameter." In support of their contrary view, the appellants present the following argument on page 27 of the brief:

> The Rostoker patent discloses only one approach for obtaining nanoparticles of Al_2O_3, a process described in U.S. Patent 5,128,081 to Siegel et al. (the Siegel patent) . . . . The Siegel patent describes the use of a gas phase condensation approach to producing the particles. This approach leads to a tail at larger particle sizes that brings the distribution outside of Applicants' claimed ranges. As evidence of this, Applicants previously filed a copy of a reference by Siegel et al., J. de Physique C5: Supplement 10 681-686 (October 1988). . . . The inset in figure 1 shows a particle size distribution for titanium

> dioxide produced by the gas phase condensation approach. The discussion below figure 1 refers to the distribution as "typical of the particle-size distribution produced in the gas-condensation method."
>
> The long tail at larger particle sizes in the distribution clearly distinguishes the materials from those claimed by Applicants. The average "grain size" is about 13 nm, and a significant fraction of the particles have a size larger than 160 percent of the average, i.e., about 21 nm. While the tail is truncated in the figure, it is clear from the presence of the tail shown in the histogram that more than 1 particle in one million will have a diameter greater than 39 nm, three times the average particle size.

This argument is unpersuasive for a number of reasons. First, contrary to the appellants' implication, Rostoker does not disclose that his aluminum oxide nanoparticles can be made only by the method of the Siegel patent. Indeed, Rostoker refers to methods generally for producing nanocrystalline materials (e.g., see lines 25-56 in column 6). Second, we do not share the appellants' view that the Siegel article in J. de Physique C5 evinces that Siegel's method produces a distribution outside the here claimed range. According to the appellants, "[w]hile the tail is truncated in the figure [i.e., see figure 1 and the inset thereof on page 683 of the article], it is clear from the presence of the tail shown in the histogram that more than 1 particle in one million will have a diameter greater than 39 nm, three times the average particle size" (brief, page 27). The

basis for this statement is not clear at all. In fact, this statement is contrary to the particle size distribution shown in the figure 1 inset which displays a maximum grain size of less than 30 nm. Finally, in addition to being unsupported by and in fact contrary to factual evidence, this statement is yet further undermined because it is in the form of mere attorney argument. In this regard, it is well settled that attorney argument cannot take the place of probative evidence. See In re Lindner, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972).

As further support for the appellants' position that Rostoker's particle dispersion would not have the distribution defined by appealed claim 1, the appellants refer to the Kambe declaration copy attached to their brief. The appellants proffer this declaration "as support that other approaches for the formation of applicants' claimed invention are not available" (brief page 28). However, this declaration merely presents conclusory statements without scientific rationale or evidence in support thereof. For example, this declaration does not address the above discussed issues concerning the Siegel patent and the Siegel article and in particular why the article is thought to evince that the method of the Siegel patent is not capable of producing the here claimed distribution. It is here appropriate

to emphasize that the Rostoker patent expressly discloses, exemplifies and claims particle dispersions which include distributions within the range defined by appealed claim 1. This patent is statutorily presumed to be valid (35 U.S.C. § 282), and the burden of proving otherwise is substantial. See In re Weber, 405 F.2d 1403, 1407, 160 USPQ 549, 553 (CCPA 1969) and In re Michalek, 162 F.2d 229, 231-32, 74 USPQ 107, 109 (CCPA 1947).

For the above stated reasons, it is our determination that the reference evidence adduced by the examiner establishes a prima facie case of unpatentability with respect to appealed claim 1 which the appellants have failed to successfully rebut with argument and/or evidence of patentability. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

We reach a corresponding determination regarding appealed independent method claim 31. This claim does not include the distribution limitation discussed above with respect to particle dispersion claim 1. Instead, this claim requires that the particle dispersion defined therein for abrading the surface must result in "removing greater than about a factor of two more material from the surface per unit time than corresponding

polishing with an equivalent concentration of particles having an equivalent composition and an average particle diameter of greater than about 1 micron." While Rostoker does not define his particle dispersion and his method of using it in terms of such a result, this fact does not forestall a determination of unpatentability.

This is because patentee's particle dispersion is identical to the particle dispersion as broadly defined by claim 31 and as more narrowly defined by claim 1. Since the particle dispersion products disclosed by Rostoker and claimed by the appellants are identical, it is reasonable to believe that the former must inherently possess the same characteristics as the latter including the abrading characteristic recited in appealed claim 31 in terms of a material removal factor. Where, as here, the claimed and prior art products are identical or substantially identical, the Patent and Trademark Office can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his product. Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on "prima facie obviousness" under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the inability of Patent and

Trademark Office to manufacture products or to obtain and compare prior art products. In re Best, 562 F.2d 1252, 1254-55, 195 USPQ 430, 433-34 (CCPA 1977). Also see MEHL/Biophile Int'l Corp. v. Milgrawm, 192 F.3d 1362, 1365, 52 USPQ2d 1303, 1306-07 (Fed. Cir. 1999) and W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

On the record of this appeal, the appellants have proffered no such proof. Therefore, we again determine that the Rostoker reference evidence establishes a prima facie case of unpatentability with respect to appealed independent claim 31 which the appellants have failed to successfully rebut with argument and/or evidence of patentability. In re Oetiker, 977 F.2d at 1445 24 USPQ2d at 1444.

In light of the foregoing, we hereby sustain the examiner's Section 103 rejection of all appealed claims as being unpatentable over Rostoker in view of Ishitobi and Farkas.

Concerning the obviousness-type double patenting rejection based on the claims of Kambe, we share the examiner's view that the polishing composition defined by Kambe's claims (e.g., see patent claims 1 and 5) possesses a distribution that is indistinguishable from the distribution defined by appealed claim

1. According to the appellants, "[t]he presently claimed distributions are narrower than the distributions of the '735 patent [i.e., Kambe]" (reply brief, page 4). We do not agree.

The distribution defined by Kambe's claim 5 requires that "effectively no particles have an [sic] diameter greater than about 5 times the average diameter." This distribution range fully encompasses the distribution defined by appealed claim 1 as having "less than about one in 10^6 particles having a primary particle diameter greater than about three times the average primary particle diameter." Indeed the distribution scope of claim 1 (i.e., less than one in a million particles have a diameter greater than about three times the average) occupies a wide majority of the distribution scope defined by Kambe's claim 5 (i.e., no particles have a diameter greater than about five times the average). Stated otherwise, a wide majority of the distribution embodiments encompassed by claim 5 are identical to all of the distribution embodiments encompassed by claim 1. We do not perceive and the appellants do not explain any basis for their position that the somewhat more narrow distribution feature of appealed claim 1 somehow renders this claim patentably distinguishable over claim 5 of Kambe.

Additionally and perhaps more importantly, the particles and concomitant distributions defined by appellants' claim 1 and Kambe's claim 5 are both produced by the same laser pyrolysis technique (e.g., compare the disclosure on pages 6-8 of the subject specification with the disclosure in columns 3 and 4 of the Kambe patent). Therefore, in making and using Kambe's claim 5 invention pursuant to patentee's specification disclosure, a practitioner would have produced a particle dispersion and distribution identical to the dispersion and distribution defined by appealed claim 1. Thus, while the scope of protection may differ slightly, the actual invention claimed and disclosed by the appellants is identical to the actual invention claimed and disclosed by Kambe.

As for appealed independent method claim 31, the appellants argue that "the claims of the '735 patent [to Kambe] do not relate to polishing rates at all" (reply brief, page 4). As previously explained, however, because the particle dispersions claimed by Kambe and by appellants are identical, it is reasonable to believe that the former would inherently possess the "polishing rates" characteristic of the latter, and the appellants have submitted no proof contrariwise. See In re Best, 562 F.2d at 1254-55, 195 USPQ at 433-34.

For these reasons, we also hereby sustain the examiner's obviousness-type double patenting rejection of all appealed claims as being unpatentable over the claims of Kambe in view of Ishitobi and Farkas.[3]

We cannot sustain the examiner's obviousness-type double patenting rejection of all appealed claims as being unpatentable over the claims of Reitz in view of Ishitobi and Farkas. As correctly argued by the appellants, the claims of Reitz are directed to a collection of particles in a powder comprising crystalline zinc oxide rather than to a particle dispersion or to polishing methods of the type here claimed. Furthermore, as also correctly argued by the appellants, Ishitobi and Farkas contain no teaching or suggestion of forming the zinc oxide claimed by Reitz into a particle dispersion.

---

[3]Again, we need not discuss the Ishitobi and Farkas references because they have not been relied upon by the examiner with respect to the argued claims on appeal.

The decision of the examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

BRADLEY R. GARRIS)
Administrative Patent Judge)
)
)
CATHERINE TIMM) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
) INTERFERENCES
)
LINDA R. POTEATE)
Administrative Patent Judge)

BRG:hh

Appeal No. 2004-1233
Application No. 09/433,202

PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A.
4800 IDS CENTER
80 SOUTH 8TH ST.
MINNEAPOLIS, MN 55402-2100

APPENDIX

Rostoker teaches that:

> the alpha aluminum oxide particles used for polishing exhibit the following characteristics. Preferably, the particle size is "X" nm, and the distribution of particle sizes is controlled to within "Y" nm, and the particles used for polishing are "Z" percent (%) in the alpha phase, where: "X" is 10-100 nm; such as 10, 20, 30, 40 and 50 nm, and is preferably no greater than 50 nm; and "Y" is approximately "P" percent of "X", where "P" is 10%, 20%, 30%[,] 40% or 50%, and is preferably no greater than 50% to ensure a narrow (Gaussian) distribution of particle sizes about "X"; "Z" is at least 50%, including at least 60%, 70%, 80% and 90%, and as high as 100%.

Rostoker, column 7, lines 4-17.

EXAMPLE 1 (Rostoker): Average particle size X = 10 nm

1. Y = 10% of 10 nm (P x X) = 1 nm

Particle size distribution (X $\pm$ Y) = 9-11 nm (10 $\pm$ 1nm)

2. Y = 50% of 10 nm = 5 nm

Particle size distribution = 5-15 nm (10 $\pm$ 5 nm)

COMPARISON EXAMPLE 1: Average particle size = 10 nm

Claim 1: Particle size distribution = 0-30 nm (10 x 3)